

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A method of making an oxidation protective multiple coating for a carbon/carbon composite, the method comprising:

(a) forming an initial coating layer on the carbon/carbon composite by a pack cementation process;

(b) spraying a mixture comprising a vehicle liquid and Si powder on the carbon/carbon composite and drying the mixture to remove the vehicle liquid;

(c) heat-treating the Si-coated carbon/carbon composite to impregnate the initial coating layer and cracks in the initial coating layer with Si, thereby forming by thermal diffusion during the heat treatment one SiC layer, and one SiC layer over the SiC layer, wherein the heat treating is performed at a temperature of 1400 °C to about 1600 °C under a pressure of about 10 mTorr to about 1000 mTorr the Si coated carbon/carbon composite to impregnate the initial coating layer and cracks in the initial coating layer with Si; thereby forming an SiC layer and an Si layer; and

(d) oxidizing the Si layer to form an SiO₂ film.

2-3. (cancelled)

4. (previously presented) The method of claim 1, wherein the vehicle liquid is a volatile alcohol.

5. (cancelled)

6. (previously presented) The method of claim 1, wherein the oxidizing of the Si layer is performed at a temperature of about 400 °C to about 800 °C.

7. (withdrawn) A coated carbon/carbon composite made according to the method of claim 1.

8. (canceled)

9. (new) A method of making an oxidation protective multiple coating for a carbon/carbon composite, the method comprising:

(a) forming an initial coating layer on the carbon/carbon composite by a pack cementation process;

(b) spraying a mixture comprising a vehicle liquid and Si powder on the carbon/carbon composite and drying the mixture to remove the vehicle liquid;

(c) heat-treating the Si-coated carbon/carbon composite to impregnate the initial coating layer and cracks in the initial coating layer with Si, thereby forming by thermal diffusion during the heat treatment one SiC layer, and one SiC layer over the SiC layer, wherein the Si layer is exclusively Si, wherein the heat treating is performed at a temperature of 1400 °C to about 1600 °C under a pressure of about 10 mTorr to about 1000 mTorr; and

(d) oxidizing the Si layer to form an SiO₂ film.

10. (new) A method of making an oxidation protective multiple coating for a carbon/carbon composite, the method comprising:

(a) forming an initial coating layer on the carbon/carbon composite by a pack cementation process;

(b) spraying a mixture comprising a vehicle liquid and Si powder on the carbon/carbon composite and drying the mixture to remove the vehicle liquid, leaving only the Si on the composite;

(c) heat-treating the Si-coated carbon/carbon composite to impregnate the initial coating layer and cracks in the initial coating layer with Si, thereby forming by thermal diffusion during the heat treatment one SiC layer, and one SiC layer over the SiC

layer, wherein the heat treating is performed at a temperature of 1400 °C to about 1600 °C under a pressure of about 10 mTorr to about 1000 mTorr; and

- (d) oxidizing the Si layer to form an SiO₂ film.

11. (new) A method of making an oxidation protective multiple coating for a carbon/carbon composite, the method comprising:

- (a) forming an initial coating layer on the carbon/carbon composite by a pack cementation process;

- (b) spraying a mixture consisting essentially of a vehicle liquid and Si powder on the carbon/carbon composite and drying the mixture to remove the vehicle liquid;

- (c) heat-treating the Si-coated carbon/carbon composite to impregnate the initial coating layer and cracks in the initial coating layer with Si, thereby forming by thermal diffusion during the heat treatment one SiC layer, and one SiC layer over the SiC layer, wherein the heat treating is performed at a temperature of 1400 °C to about 1600 °C under a pressure of about 10 mTorr to about 1000 mTorr; and

- (d) oxidizing the Si layer to form an SiO₂ film.